1. A method for manufacturing a semiconductor substrate, comprising the step of:

forming a first buffer Si layer on a substrate having a silicon surface;

epitaxially growing, in sequence, a first strained SiGe layer and a first Si layer above the first buffer Si layer;

implanting ions into the resulting substrate followed by annealing so as to relax the lattice of the first strained SiGe layer and to thereby providing tensile strain in the first Si layer; and

epitaxially growing, in sequence, a second buffer Si layer and a second SiGe layer above the first Si layer; and forming a second Si layer having tensile strain on the second SiGe layer.

2. The method for manufacturing a semiconductor substrate of claim 1, further comprising, after tensile strain is provided in the first Si layer and before the second buffer Si layer is formed on the rezulting substrate, washing the first Si layer to reduce the concentration of residual oxygen existing on the surface of the first Si layer.

3. The method for manufacturing a semiconductor substrate of claim 1 wherein the concentration of residual oxygen existing on the surface of the first Si layer is no greater than 1×10^{16} cm^{-3} after washing.

4. The method for manufacturing a semiconductor substrate of claim 1 wherein the first strained SiGe layer is no greater than the critical film thick.

5. The method for manufacturing a semiconductor substrate of claim 4 wherein the first strained SiGe layer is 10 to 300 nm thick.

CLAIMS 6-11 (CANCELLED)